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FIELD EVALUATION OF SOME SELECTED LINES OF MUSK MELON AGAINST RED PUMPKIN BEETLE, *AULACOPHORA FOVEICOLLIS* LUCAS

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Abstract

Field evaluation of 12 selected lines of musk melon was assessed against red pumpkin beetle in the experimental field of Horticulture Department, Bangabandhu Shiekh Mujibur Rahman Agricultural University (BSMRAU) during October to December 2007. The abundance of the red pumpkin beetle (RPB) was assessed when damage was noticed on the cotyledonus leaves. None of the muskmelon lines were found free from the attack of RPB or escaped its damage throughout the crop period. In terms of abundance level, CM007 was found to be the most susceptible line followed by CM039, CM015 and CM001, respectively. In terms of percent leaf infestation, CM022 was found to be the most susceptible line followed by CM030, CM001 and CM006.

Introduction

Musk melon is an important cucurbitaceous crop grown in Hilly and coastal areas of Bangladesh. Cucurbits are severely attacked by a number of insect pests among which red pumpkin beetle and fruit flies are the most destructive (Alam, 1969; Butani and Jotwani, 1984). Red pumpkin beetle, *Aulacophora foveicollis* Lucas is a serious pest of musk melon (*Cucumis melo* L) particularly at seedling stage (Hussain and Shah, 1926; Nath, 1964 and Pareek and Kavadia, 1988). The adults feed voraciously on young leaves which some times necessary for resowing. There is need to find out lines of musk melon which are less infested by red pumpkin beetle. An attempt was therefore, made to evaluate some lines of musk melon against red pumpkin beetle in field condition.

Materials and Methods

The experiment was conducted in the experimental field, Department of Horticulture, Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU) during October to December 2007. Twelve lines of musk melon viz., CM010 (V1), CM039 (V2), CM007 (V3), CM001 (V4), CM004 (V5), CM022 (V6), CM006 (V7), CM002 (V8), CM015 (V9), CM030 (V10), CM005 (V11) and CM003 (V12) were evaluated. The experiment was laid out in RCBD with three replications. Seeds of musk melon lines were collected from the Department of Horticulture, BSMRAU. Seeds were sown in poly bag on 7 October, 2007. The field was prepared by ploughing followed by laddering to obtain good tilth, during the 3rd week of October, 2007. The plot size was 4 m x 3 m with 1.5 m apart of each block. Recommended doses of fertilizer and agronomic practices were followed by Rashid (1993). Fifteen dayold

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seedlings were transplanted in the main field on 30 October, 2007. The number of red pumpkin beetle and leaf infestation were recorded by counting red pumpkin beetle per plant, and the number of infested and healthy leaves per plant through visual inspection. This operation was done at 7 days interval starting from one week after transplanting and continued up to fruiting stage. The percent leaf infestation per plant was calculated from the healthy and infested leaves of 4 plants per plot. Screening of musk melon lines were done under field condition with natural infestation. Less susceptible varieties to red pumpkin beetle were evaluated based on the abundance of red pumpkin beetle, its nature and quantity of damage and percent leaf infestation of plants of a plot. The analysis of variance (ANOVA) of different parameters was performed using MSTAT-C software after square root transformation. Means were separated by DMRT.

Results and Discussion

Abundance of red pumpkin beetle

The data presented in Table 1 revealed that out of 12 lines screened, none of them was found to be resistant to beetle attack in the field. The abundance of red pumpkin beetle per plant in musk melon lines were observed from seedling stage and continued up to fruiting stage of the crop (Table 1). At seedling stage, no significant difference was observed among musk melon lines with number of RPB. At this stage, the number of RPB ranged from 0.71 to 1.22 per plant. The maximum abundance was recorded in line CM003 (1.22) followed by CM002 (1.17) and CM007 (1.10) while the minimum was in CM005 (0.71). At vegetative stage, the number of RPB ranged from 0.71 to 1.29 where no significant variation was observed among musk melon lines. The maximum abundance was recorded in line CM004 (1.29) followed by CM002 (1.05) and CM007 (1.00) while lower in CM015 (0.71).

Table 1. Abundance of red pumpkin beetle infesting musk melon lines at various growth stages of plant during November to December, 2007

Lines	Mean number of red pumpkin beetle per plant at				Mean of all stages
	Seedling stage	Vegetative stage	Flowering stage	Fruiting stage	
CM010	0.88	0.88	1.05ab	1.00bc	0.95
CM039	1.05	0.88	1.17ab	1.46ab	1.14
CM007	1.10	1.00	0.88b	1.77a	1.19
CM001	0.88	0.88	0.71b	0.88bc	0.84
CM004	0.88	1.29	1.05ab	1.17abc	1.10
CM022	0.88	0.88	1.52a	1.00bc	1.07
CM006	0.88	1.00	1.05ab	0.71c	0.91
CM002	1.17	1.05	1.17ab	0.88bc	1.07
CM015	0.88	0.71	0.71b	0.88bc	0.80
CM030	1.05	0.88	1.17ab	0.71c	0.95
CM005	0.71	0.88	0.88b	1.17abc	0.91
CM003	1.22	0.88	0.71b	0.88bc	0.92
Range	0.71-1.22	0.71-1.29	0.71-1.52	0.71-1.77	
CV(%)	34.70	38.30	32.23	31.77	

In a column, means followed by common letters under the same factor are not significantly different at 5 % level by DMRT values.
Figures are transformed values based on square root transformation ($\sqrt{x} + 0.5$).

At flowering stage, significant variation was observed on the abundance of RPB among musk melon lines. Higher number of RPB per plant was recorded in line CM022 (1.52) which was statistically similar to those of CM039 (1.17), CM002 (1.17), CM030 (1.17), CM010 (1.05), CM004 (1.05) and CM006 (1.05), respectively. However, the lower and similar

abundance was observed in CM001 (0.71), CM015 (0.71) and CM003 (0.71), and that of CM007 (0.88) and CM005 (0.88).

At fruiting stage, significant variation was observed on the abundance of RPB. The maximum abundance per plant was recorded in line CM007 (1.77) which was statistically similar to those of CM039 (1.46), CM004 (1.17) and CM005 (1.17), respectively. Lower and similar abundance was observed in CM006 (0.71) and CM030 (0.71) but CM001 (0.88), CM002 (0.88), CM015 (0.88) and CM003 (0.88) lines were also identical.

From the above, it may be said that mean of all stages indicated that the maximum abundance was observed in line CM007 (1.19) followed by CM039 (1.14) and CM004 (1.10) while minimum in CM015 (0.80) followed by CM001 (0.84).

Percent leaf infestation

Percent leaf infestation per plant on different lines of musk melon at seedling, vegetative and flowering stages of plant growth were presented in Table 2. At seedling stage, no significant variation was observed on percent leaf infestation among different lines of musk melon. Percent leaf infestation ranged from 53.33 to 100% where the highest percent leaf infestation was recorded in CM003 and the lowest in CM001.

Table 2. Percent leaf infestation per plant in musk melon lines infested by red pumpkin beetle at different growth stages of plant during November to December, 2007

Lines	% leaf infestation per plant at			Mean of all stages
	Seedling stage	Vegetative stage	Flowering stage	
CM010	82.14	61.24ab	68.98abc	70.79
CM039	81.02	36.76b	58.14abc	58.64
CM007	62.06	48.10ab	57.75abc	55.97
CM001	53.33	45.85b	43.90bc	47.69
CM004	77.78	77.13a	56.52abc	70.48
CM022	77.78	64.04ab	81.30a	74.37
CM006	63.49	36.35b	54.80abc	51.55
CM002	78.33	53.95ab	54.20abc	62.16
CM015	80.00	59.35ab	36.94c	58.76
CM030	67.41	77.88a	76.85ab	74.05
CM005	63.81	46.06b	70.32abc	60.06
CM003	100	37.85b	73.21ab	69.69
Range	53.33 -100	36.35 - 77.88	36.94 - 81.30	
CV(%)	28.12	29.50	30.14	

In a column, means followed by common letters under the same factor are not significantly different at 5 % level by DMRT values.

At vegetative stage, significant variation was observed on percent leaf infestation among 12 lines of musk melon. The maximum percent leaf infestation was recorded in CM030 (77.88%) which was statistically similar to CM004 (77.13%), CM022 (64.04%), CM010 (61.24%), CM015 (59.35%), CM002 (53.95%) and CM007 (48.10%), respectively. The lowest percent leaf infestation was recorded in CM006 (36.35%) which was statistically similar to CM039 (36.76%) followed by CM003 (37.85%), CM001 (45.85%) and CM005 (46.06%), respectively. At fruiting stage, significant variation was also observed on percent leaf among different lines of musk melon. The maximum percent leaf infestation was recorded in CM022 (81.30%) which was statistically similar to CM030 (76.85%), CM003 (73.21%), CM005 (70.32%), CM010 (68.98%), CM039 (58.14%) and CM007 (57.75%). The lowest percent leaf infestation was recorded in CM015 (36.94%) followed by CM001 (43.90%). It was observed that mean of all

stages of percent leaf infestation was higher in CM030 (74.05%) followed by CM010 (70.79%) while lower in CM001 (47.69%) and CM006 (51.55%).

Number of lady bird beetle

Fig. 1 revealed that the maximum number of lady bird beetle was recorded in lines CM004 followed by CM006, CM039, CM001, CM022 and CM002, respectively. The minimum number of lady bird beetle was in line CM015, CM005 and CM003. Lady bird beetle was not observed in line CM010, CM007 and CM030, respectively.

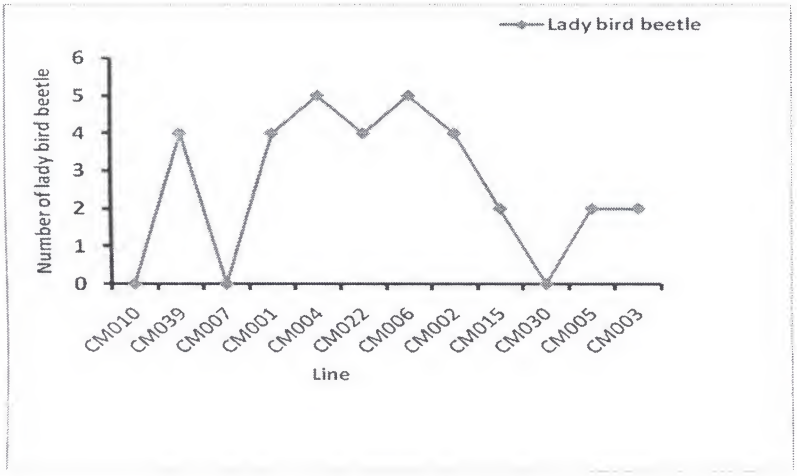

Fig. 1. Number of lady bird beetle per plant on different lines of musk melon during November to December 2007

Conclusion

None of the 12 musk melon lines either remained free from the attack of red pumpkin beetle or escaped its damage throughout the crop period. However, differences existed in the abundance levels of this pest and percent leaf infestation. In terms of the number of RPB, the line CM007 was found to be the most susceptible line followed by CM039, CM015 and CM00, respectively and rest lines were found to be less susceptible.

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